

COMPLETE LISTING OF CLAIMS
IN ASCENDING ORDER WITH STATUS INDICATOR

Claim 1 (currently amended): An exposure method for exposing a wafer having magnetic material by using an electron beam, comprising:

placing said the wafer on a wafer stage;

detecting a reference location provided on the wafer;

exposing the wafer to the electron beam;

detecting a reflected location at where the electron beam is reflected from the wafer;

~~calculating a correction value that corrects a deflection amount by a deflector that deflects said electron beam, based on an irradiation position on said wafer on which said electron beam is to be incident and a magnetic field formed by said magnetic material based on said reference location and said reflected location for correcting a displacement of said reflected location due to a magnetic field of the magnetic material; and~~

deflecting said electron beam based on said correction value ~~to expose said wafer.~~

Claim 2 (original): An exposure method as claimed in claim 1, wherein said calculation calculates said correction value further based on a distribution of said magnetic material on said wafer.

Claim 3 (original): An exposure method as claimed in claim 1, wherein said calculation calculates said correction value further based on a wafer-placed position on said wafer stage at which said wafer is placed.

Claim 4 (original): An exposure method as claimed in claim 1, wherein said calculation calculates said correction value further based on a positional relationship between said wafer and a magnetic field formed by an electromagnetic lens for converging said electron beam.

Claim 5 (original): An exposure method as claimed in claim 4, wherein said calculation calculates said correction value based on said positional relationship between said wafer and said electromagnetic lens serving as an objective lens.

Claim 6 (original): An exposure method as claimed in claim 1, wherein said calculation calculates said correction value further based on a shape of said wafer.

Claim 7 (original): An exposure method as claimed in claim 1, further comprising correcting a stage-position that is a position of said wafer stage,

wherein said calculation calculates said correction value based on said irradiation position on said wafer placed on said wafer stage for which said stage-position has been corrected.

Claim 8 (original): An exposure method as claimed in claim 1, further comprising forming a mark portion on said wafer,

wherein said calculation calculates said correction value further based on a positional relationship between said mark portion and said irradiation position on said wafer.

Claim 9 (original): An exposure method as claimed in claim 1, further comprising:
placing another wafer on said wafer stage;
correcting another correction value that corrects said deflection amount by said deflector based on a positional relationship between said wafer-placed position of said wafer on said wafer stage and another wafer-placed position of said other wafer on said wafer stag, and said correction value for said wafer; and
deflecting said electron beam based on said another correction value to expose said other wafer.

Claim 10 (canceled)

Claim 11 (currently amended): An electron beam exposure apparatus for exposing a wafer having magnetic material by using an electron beam, comprising:

a wafer stage on which said the wafer is to be placed;

an exposure unit operable to expose the wafer to the electron beam;

a detector unit operable to detect a reference location provided on the wafer and a reflected location at where the electron beam is reflected from the wafer;

a deflector operable to deflect said electron beam; and

a calculation unit operable to calculate a correction value that corrects a deflection amount of said electron beam by said deflector, based on an irradiation position on said wafer, on which said electron beam is to be incident, and a magnetic field formed by said magnetic material based on said reference location and said reflected location for correcting a displacement of said reflected location due to a magnetic field of the magnetic material; and

a deflector operable to deflect the electron beam based on said correction value.

Claim 12 (original): An electron beam exposure apparatus as claimed in claim 11, further comprising an electromagnetic lens operable to form a magnetic field to converge said electron beam, wherein said calculation unit calculates said correction value further based on a positional relationship between said wafer and said magnetic field formed by said electromagnetic lens.

Claim 13 (original): An electron beam exposure apparatus as claimed in claim 12, wherein said electromagnetic lens serves as an objective lens.

Claim 14 (currently amended): A fabrication method of an electronic device by exposing a wafer having magnetic material by using an electromagnetic lens, comprising:

placing said the wafer on a wafer stage;

detecting a reference location provided on the wafer;

exposing the wafer to an electron beam;

detecting a reflected location at where the electron beam is reflected from the wafer;

~~calculating a correction value that corrects a deflection amount by a deflector for deflecting said electron beam, based on an irradiation position on said wafer, on which said electron beam is to be incident, and a magnetic field formed by said magnetic material based on said reference location and said reflected location for correcting a displacement of said reflected location due to a magnetic field of the magnetic material; and~~

deflecting said electron beam based on said correction value ~~to expose said wafer.~~

Claim 15 (original): A fabrication method of an electronic device as claimed in claim 14, further comprising forming a mark portion including at least a first mark portion in a first region in said wafer,

wherein said placing of said wafer places said wafer with said first mark portion therein on said wafer stage, and

said calculation calculates said correction value further based on a position of said first mark portion in said wafer.

Claim 16 (currently amended): A fabrication method of an electronic device as claimed in claim 15, further comprising:

storing said correction value in said first region;

placing ~~other~~ another wafer having magnetic material on said wafer stage; and

irradiating said first region in said wafer with said electron beam based on said stored correction value in said first region and a position of said other wafer on said wafer stage.

Claim 17 (original): A fabrication method of an electronic device as claimed in claim 15, wherein said formation of said mark portion includes:

applying resist on said wafer;

exposing said resist by irradiating said first region with light to form said first mark portion in said first region; and

exposing said resist by irradiating a second region in said wafer with light to form a second mark portion in said second region,

wherein said calculation calculates said correction value in said first region further based on said position of said first region and calculates said correction value in said second region further based on a position of said second region, and

wherein, in said exposure of said wafer, said electron beam is deflected based on said correction value in said first region in a case where said first region is irradiated with said electron beam, and is deflected based on said correction value in said second region in a case where said second region is irradiated with said electron beam.

Claim 18 (original): A fabrication method of an electronic device as claimed in claim 17, wherein said formation of said mark portion includes forming a plurality of first mark portions in said first region and forming a plurality of second mark portions in said second region, and

said calculation calculates said correction value in said first region further based on relative positions of said first mark portions and calculates said correction value in said second region further based on relative positions of said second mark portions.